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Intestinal parasitic infections in homosexual men: prevalence, symptoms and factors in transmission

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In a controlled study 67.5% of 200 homosexual men but only 16% of 100 heterosexual men were found to be infected with intestinal parasites. *Entamoeba histolytica* was isolated from 27% of the homosexual and 1% of the heterosexual men, and *Giardia lamblia* was isolated from 13% of the homosexual and 3% of the heterosexual men. The presence of symptoms could not be correlated with infection except when the infection was caused by more than one organism, including *G. lamblia*. Symptoms were much more common in both infected and uninfected homosexuals than in heterosexuals. Among the homosexual men recent foreign travel, living in a homosexual household and promiscuity were not correlated with intestinal parasitic infection, but cleansing of the anus before anal sex was associated with a significantly lower prevalence of infection. These findings suggest that the male homosexual community may be an important reservoir of potentially pathogenic protozoa.

Dans une étude contrôlée une infection à parasites intestinaux a été retrouvée chez 67.5% de 200 homosexuels mâles comparativement à seulement 16% de 100 hétérosexuels du même sexe. *Entamoeba histolytica* a été isolé chez 27% des homosexuels et 1% des hétérosexuels, et *Giardia lamblia* a été isolé chez 13% des homosexuels et 3% des hétérosexuels. La présence de symptômes n'a pu être reliée à une infection sauf lorsque l'infection était causée par plus d'un organisme, incluant *G. lamblia*. Des symptômes étaient beaucoup plus fréquents chez les homosexuels infectés ou non infectés que chez les hétérosexuels. Chez les homosexuels un voyage récent à l'étranger, la résidence dans un foyer homosexuel et la promiscuité ne montrèrent pas de corrélation avec une infection parasitaire intestinale, mais le lavage de l'anus avant l'intromission anale fut associé à une prévalence significativement plus faible d'infection. Ces observations indiquent que la communauté homosexuelle mâle peut constituer un important réservoir de protozoaires potentiellement pathogènes.

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In the past 10 years several individual case reports and a few retrospective studies have hinted at the problem of sexual transmission of pathogenic intestinal viruses, bacteria and parasites in the male homosexual community.[1-9] Shigellosis and viral hepatitis appear to be growing problems among homosexual men. In 1967 Most,[10] in his presidential address to the American Society of Tropical Medicine and Hygiene, first suggested the association of amebiasis with homosexuality. Recently giardiasis has also been reported with increasing frequency in this group.[11,12]

To assess the prevalence of sexually transmitted intestinal parasitic infections among homosexual men in Toronto we carried out a controlled study.

Method

From May until August 1978, mail-in stool containers along with leaflets outlining the purpose of the study were placed in a bookstore, a church, a public bath and the waiting rooms of a community clinic and a private physician, all of which were frequented predominantly by homosexual men. Similar containers were distributed to heterosexual male members of two Metropolitan Toronto fire departments, who served as a control group. Participation in the study was strictly voluntary.

Each volunteer completed a questionnaire (anonymity was optional) outlining the following information: age, foreign travel in the past year (excluding the United States), specific gastrointestinal or systemic symptoms, and sexual orientation. The homosexual men completed a more detailed section on the sexual orientation of members of their household, their methods of cleansing before anal sex, the number of sexual

partners in the previous 6 months and their sexual habits.

The volunteers mailed a stool sample in sodium acetate–formalin preservative[13] along with the questionnaire to the Ontario Ministry of Health Laboratories in Toronto. All specimens were processed by the formalin–ether concentration method,[14] and smears were prepared as described by Scholten[15] and stained with hematoxylin.

The data were analysed by Student's *t*-test and the chi-square test.

Results

Two hundred homosexual and 100 heterosexual men were studied. The mean ages of the two groups were 31.5 (range 18 to 62) years and 38.2 (range 23 to 58) years respectively. Two of the 100 homosexual men from whom this information was available but none of the heterosexual men were born outside northern Europe, Canada and the United States.

The prevalence of intestinal parasitic infection was significantly greater ($P < 0.001$) in the homosexual men than in the heterosexual men (Table I). In both groups *Endolimax nana* was the nonpathogen most frequently isolated.

Although symptoms were more common in the infected than in the uninfected homosexuals, there was no statistically significant correlation of the presence of symptoms with infection in the homosexuals or the heterosexuals (Table II). On the other hand, among the uninfected men the association of symptoms with homosexuality was highly significant ($P < 0.001$). When each parasite was considered individually or in combination with other organisms, it was found that only infection with more than one organism, including *Giardia lamblia*, was associated with symptoms ($P < 0.05$).

The most common symptoms in the homosexual men were flatulence (73%), decreased stool consistency (71%), fatigue (65%), increased stool frequency (58%) and abdominal pain (41%). The remaining complaints, in order of decreasing frequency, were nausea, bloating, anorexia, belching and weight loss. The frequency of these symptoms was similar in the heterosexual men except for bloating, which was as common as flatulence in this group.

Several factors were evaluated to determine their influence on the transmission of intestinal parasites in the two groups (Table III). Among the heterosexual men parasitic infection was not correlated with a history of foreign travel. Parasitic infection in the homosexual men was not correlated with a history of foreign travel, living in a homosexual household or having had more than 10 sexual partners in the previous 6 months, but it was significantly correlated ($P = 0.05$) with a lack of cleansing (douching, use of a cleansing enema or bathing) before anal sex.

Discussion

Since this is, to our knowledge, the first controlled study of the prevalence of intestinal parasitic infections in homosexual men there is little available information with which to compare our results. William and colleagues[16] published preliminary findings in 89 middle-class homosexual men attending a New York City

Table I—Prevalence of intestinal parasitic infection in homosexual and heterosexual men as determined by stool examination

Parasite	No. (and %) of men infected	
	Homosexual (n = 200)	Heterosexual (n = 100)
Entamoeba histolytica or *Giardia lamblia* or both*	73 (36.5)	4 (4)
Nonpathogenic protozoa†	61 (30.5)	12 (12)
Ascaris lumbricoides	1 (0.5)	-
Total	135 (67.5)‡	16 (16)

*Of the homosexual and heterosexual men 54 (27%) and 1 (1%) respectively were infected with *E. histolytica* and 26 (13%) and 3 (3%) were infected with *G. lamblia*.
†In order of decreasing frequency, *Endolimax nana, Entamoeba hartmanni, Entamoeba coli, Iodamoeba buetschlii* and *Dientamoeba fragilis*.
‡Difference significant at $P < 0.001$ by chi-square analysis.

Table II—Relation of symptoms to parasitic infection in the two groups*

Symptoms	No. (and %) of men			
	Homosexual		Heterosexual	
	Infected	Uninfected	Infected	Uninfected
Present	79 (59)	34 (52)	1 (6)	9 (11)
Absent	56 (41)	31 (48)	15 (94)	75 (96)
Total	135 (100)	65 (100)	16 (100)	84 (100)

*By chi-square analysis there was no statistically significant correlation of symptoms with infection, but among the uninfected men there was a highly significant association ($P < 0.001$) of symptoms with homosexuality.

Table III—Relation of various factors to parasitic infection in the two groups

Sexual orientation and factor*	No. (and %) of men		
	Infected	Uninfected	Total
Heterosexual			
Foreign travel			
History	3 (12)	22 (88)	25 (100)
No history	13 (17)	62 (83)	75 (100)
Homosexual			
Foreign travel			
History	46 (70)	20 (30)	66 (100)
No history	89 (66)	45 (34)	134 (100)
Type of household			
Homosexual	68 (67)	33 (33)	101 (100)
Heterosexual	67 (68)	32 (32)	99 (100)
No. of sexual partners in previous 6 months			
0–1	11 (50)	11 (50)	22 (100)
> 10	44 (71)	18 (29)	62 (100)
Cleansing before anal sex			
Done	65 (61)	41 (39)	106 (100)
Not done	70 (74)	24 (26)	94 (100)

*The only factor significantly correlated ($P = 0.05$) with infection was a lack of cleansing before anal sex.

proctologist's office: intestinal protozoa were detected in 34% of the men; *Entamoeba histolytica* was found in 7% and *G. lamblia* in 9%. A retrospective study of middle- and upper-class homosexual men from the same city showed amebiasis and giardiasis in 30% of the 65 men tested.[17] Our data suggest that intestinal protozoa are highly endemic in the male homosexual community of Toronto.

Most authors have assumed that sexual transmission of intestinal parasites results from anilingus or fellatio following anal intercourse. We believe that fecal–oral contamination occurring after anal intercourse or anal manipulation is just as likely to spread intestinal protozoa. However, the overlap in types of sexual activity among the homosexual men in our study did not permit us to clarify this issue.

The parasites did not appear to be responsible for illness in the infected men: the presence of symptoms did not correlate with infection except in persons infected with more than one organism, including *G. lamblia*. Examination of a single stool sample does not exclude the presence of intestinal parasites, and since we did not perform bacterial stool cultures it is possible that some of the "uninfected" men harboured other enteric pathogens or undetected intestinal protozoa that would account for their symptoms. Furthermore, since our subjects were volunteers it is possible that symptomatic men preferentially participated in this study. This might explain why the homosexual men had more symptoms than the heterosexual men.

Since in this study the presence of symptoms did not correlate with infection it might be argued that we need not concern ourselves with the problem of amebiasis in the homosexual community. Our experience outside of this study supports this argument: we have been unable to document a single case of amebic colitis or liver abscess in several hundred homosexual men with amebiasis. As well, a recent serologic survey showed that amebic antibodies were no more frequent in homosexual men attending a Toronto venereal disease clinic than in heterosexual women attending an antenatal clinic (M.T. Kennedy and J. Yang: unpublished data, 1979).

Intestinal protozoa can live for many years in humans. It is possible, therefore, that some of the men in our study acquired their infections while travelling abroad years before the study. However, intestinal parasites were detected in six times as many homosexual men as heterosexual men with equivalent travel histories.

Living with other homosexuals did not significantly increase the likelihood of parasitic infection. Thus, our findings suggest that person-to-person transmission by infected food-handlers or contaminated inanimate objects is not an important factor in the spread of intestinal parasites within the male homosexual community.

Since cleansing before sexual contact was the only factor associated with a significantly lower prevalence of parasitic infection in homosexual men, further studies are needed to determine whether cleansing per se was responsible for the lower rate.

The problem of sexually transmitted enteric pathogens has not yet been fully appreciated by the medical profession. When consulted by a man who has gastrointestinal complaints the physician must always enquire about the patient's sexual orientation and habits. Several stool samples should be cultured for bacteria and examined for parasites if the medical and sexual history suggest infection with enteric pathogens.

Since undiagnosed and untreated infections add to the reservoir of infection in the homosexual community, some authors have advocated routine screening of sexually active homosexual men for bacterial and parasitic enteric infections.[16] Our findings support the suggestion that the male homosexual community is an important reservoir of potentially pathogenic organisms, but they do not support the call for stringent control measures in this population since these organisms did not appear to cause much illness.

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